

## ABSTRACT

A large bandwidth add-drop filter for a planar waveguide device including at least one coupler that receives an input signal and provides an output signal and a least two grating waveguides having a photonic band gap covering at least 4 optical channels. In some  
5 embodiments, the gratings have a superstructure grating strength profile to provide a spectral interleaver. In other embodiments, the gratings have a sampled grating strength profile to provide a spectral slicer. Presently, two direction couplers are used. One coupler provides an input port and a drop port and the other provides an add port and a transmission port.